AMENDMENTS TO THE SPECIFICATION

Please replace the title of the subjection application with the following paragraph rewritten in amendment format:

Atomic self-healing architecture in an electric power network

Please replace the Paragraph beginning on page 11, line 12 with the following paragraph rewritten in amendment format:

[0036] Planes of Interaction. There are three planes of interactions at each node; namely, Power Analysis and Monitor (PA/M) 41, Data Plana Plane (DP) 42 and Control Plane (CP) 43 and this concept is presented in Figure 4.

Please replace the Paragraph beginning on page 11, line 15 with the following paragraph rewritten in amendment format:

[0037] The PA/M (Power Analysis and Monitor) plane of interaction 41 can be used for implementing, for example, Power Quality of Service (pQoS). The DP (Data Plane) of interaction 42 is for data communications such as connections to the Internet. The CP (Control Plane) 43 is used to make real time adjustments, as an example, to power consumption devices such as HVAC units to meet local and/or global objections.

Please replace the Paragraph beginning on page 12, line 19 with the following paragraph rewritten in amendment format:

[0032] One of many possible arrangements for residential installations is shown in Figure 5. This configuration represents a realistic subset of devices in a home 51 and the configuration will be used to explain the overall concept. It is important to note that this example is but one of many an din no way restricts the generality of the invention.

Please replace the Paragraph beginning on page 13, line 1 with the following paragraph rewritten in amendment format:

[0033]   In this particular example, the communications form for power consumption devices in each house is in-home PLC (e.g., Home Plug Alliance or HPA). Data communications between the gateway and a PC 52 (e.g., Internet access) in one case is with wireless (802.11a) and the other is HPNA. Even supposing all the devices in the home use the same PLC technology, make note that they may be built by different manufacturers, each home may have different product models, their logical interfaces may be different, and each has different capabilities. Access PLC is used, for this particular example, at the LV and MV distribution, although the concept is general and any form would work.

Please replace the Paragraph beginning on page 13, line 10 with the following paragraph rewritten in amendment format:

[0034] Each device has its own capabilities and may have a unique commence interface. For example, the HVAC system 53 would have controls for activating the ventilation fans (e.g., controlled to maintain air freshness), the heating element (e.g.,

controlled to keep the home warm in the cold weather) and the air conditioning pump (e.g., controlled to keep the home cool in the summer). It would also use, among other possible inputs, environmental conditions from indoor and outdoor sensors such as temperature and humidity to operate. The water heater 54 has only one control function; namely to maintain a constant water temperature, although it could use some of the same inputs as the HVAC system. Since there are many makes and models of these types of equipment, note that there will be different command structures and protocols for each.

Please replace the Paragraph beginning on page 14, line 6 with the following paragraph rewritten in amendment format:

[0037] One example of device interactions (Example 1) between the HVAC unit 72 and the ~~IMP~~ IPM 74(Intelligent Power Meter) in Home N. The two device proxies allow them to interact, pass data back and forth, exchange capabilities and so on. this interaction may be used to take advantage of market based power pricing by setting the in-home temperature to a bit higher level in the summer during times when the price of electricity is higher. In this example, interactions between the two devices are peer-to-peer and yet each device has access to information from other entities (e.g., the ~~IMP~~ IPM 74gets pricing information from entities in the global network, etc.). Distributed computing is utilitized to accomplish the task (e.g., the HVAC unit's temperature, humidity and air freshness control system; the ability of the IPM 74 to fetch pricing data and make predictions if the data is not available, etc.) and the task can be performed more or less autonomously, depending on prevailing conditions.

Please replace the Paragraph beginning on page 14, line 19 with the following paragraph rewritten in amendment format:

[0038]   Another example of interactions between devices (Example 2) is shown in the figure between the hot water heater (DHW)_71 in Home N and the local power source_81. Again, the various proxies allow these two devices to interact and exchange information and control. The interaction may be a query by the hot water heater_71 to determine if there is sufficient power for a requested water demand for the dishwasher to start. The ability of the two devices to communicate peer-to-peer means that the decision-making process happens quickly and directly. Each of the two devices has access to other network devices (e.g., the DHW_71 is in contact with the dishwasher and the Local Power Source_81 is in constant contact with the generation and distribution grid). Each device has its own computing tasks (e.g., the DHW_71 runs a control algorithm for maintaining temperature and changing the setting to meet existing conditions, while the local power source_81 monitors its internal condition to determine available energy levels).

Please replace the Paragraph beginning on page 15, line 10 with the following paragraph rewritten in amendment format:

[0039]   As a data plane example (Example 3), the figure shows a PC in Home 1 interacting with an ISP to access the Internet[[)]]. The residential gateway has an 802.11a proxy_66 to make the connection to the PC_65 and then to the ISP_82 at the other end.

Please replace the Paragraph beginning on page 15, line 14 with the following paragraph rewritten in amendment format:

[0040]   The proxy concept allows direct device interfaces to be made available at different levels in the hierarchy. So, for instance (Example 4), the interface to the HVAC system 62 in Home 1 may have its entire control interface available to a service element in the distribution network to enable a home service contract to be maintained. That is, the service element would query the HVAC system 62 on a regular basis to access operational data (e.g., fan total run time to determine filter replacement needs, etc.). It may need to control the unit to verify that it is operating within set limits (e.g., start the burner to view the color and size of the flame). Armed with this data, a service call could be scheduled to replace parts or perform needed maintenance.